



You Know How to Win Guests with Comfort. We'll Help You to Keep Them with Green...

...In Your Hotel

Clean soft sheets. Luxurious towels. Inviting furnishings. Perfect room temperatures. Hot water on demand. These are the types of creature comforts that your guests expect and appreciate. So much so that they will quickly become repeat customers.

Beyond the demands of sourcing and providing these types of guest experiences, there is the more difficult challenge of meeting guest expectations regarding environmentally friendly practices. Industry trends show that hotel guests expect operators to take steps to reduce their impact on the environment. They want to know that their "favorite hotel" is as committed to the environment as they are. They expect hotels to reduce their energy usage and carbon footprint as part of a larger sustainability program.

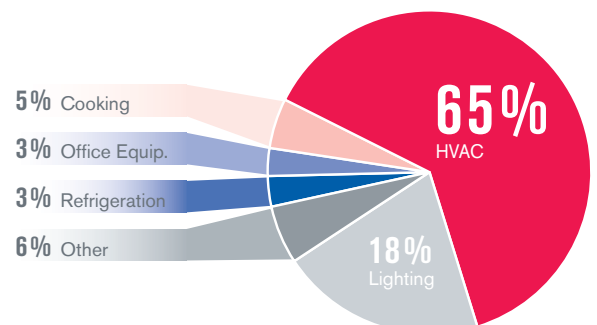
Armstrong has developed proven solutions to address water supply, heating, cooling and other HVAC issues common to hotels.

Many of the services provided by hotels involve energy-intensive equipment, including boilers,

chillers, and water pumps. In fact the lodging industry is the heaviest user of energy in the commercial sector, averaging nearly \$2 per square foot or \$2,200 per room per year in related costs.

Energy is the single fastest-growing operating cost in the lodging industry. For most hotel and motel properties, HVAC accounts for up to 65% of energy demand. Hot water delivery in particular represents 1/3 or more of energy consumption.

Hotel Energy Consumption



HVAC systems are viewed as mission critical components as they have a direct impact on what drives business success – guest comfort and operating margins. Armstrong’s demand-based solutions offer a comfortable hotel environment and decrease energy consumption, generating cost savings and reduced carbon footprint.

Hotel occupancy rates and outdoor temperatures vary significantly throughout the year. Because both of these factors affect room temperatures, HVAC requirements are also variable. Unfortunately, most HVAC systems run at full capacity and are oversized to meet the most extreme weather conditions of the year. The result is that many hotels incur costs to heat or cool rooms that are not occupied.

In contrast, variable frequency drives with integrated control match HVAC output to the system requirements at different occupancy levels, ultimately reducing energy consumption and spending.

You have expertise in providing guest comfort and anticipating their needs. Armstrong has expertise in HVAC efficiency and energy savings. You've won the loyalty of your guests with consistent service. Let us help you maintain that loyalty with energy-efficient, sustainable HVAC systems.

Project	Annual Energy Saving	Annual Cost Saving ¹	Annual CO ₂ Reduction [†]
Intelligent Variable Speed (IVS) installed on evaporator pump*	100,000 kWh	US\$ 10,000	1.50 tons
Intelligent Variable Speed (IVS) installed on domestic water booster pump*	180,000 kWh	US\$ 18,000	2.70 tons
Intelligent Variable Speed (IVS) installed on condenser pump*	190,000 kWh	US\$ 19,000	2.85 tons
Optimized flow and scheduling of water feature pumps*	320,000 kWh	US\$ 32,000	4.80 tons
Chiller replacement**	630,000 kWh	US\$ 63,000	9.45 tons

*1,400,000 ft² Hotel **242,000 ft² Hotel ¹ 0.03 lb/kWh [†] US\$0.10/kWh

A 10% reduction in energy costs is equivalent to increasing RevPAR by more than \$2.00 for full-service hotels or \$0.62 for limited service hotels.

Items That You May Have Installed	Problems You May Experience	Alternatives Available	Additional Value
Chilled Water Systems	<ul style="list-style-type: none"> • High operating costs • Unacceptable temperature swings 	<ul style="list-style-type: none"> • Integrated chilled water plants • Patented controls 	<ul style="list-style-type: none"> • Redundancy • Improved temperature control • Reduced maintenance • Extended life-cycle • Low operating cost
Boilers	<ul style="list-style-type: none"> • High operating costs • Repeated cycling 	<ul style="list-style-type: none"> • Modular boiler systems 	<ul style="list-style-type: none"> • Improved efficiency in a part-load environment • Improved temperature control
Heat Exchangers	<ul style="list-style-type: none"> • High cost of maintenance • Capacity shortages 	<ul style="list-style-type: none"> • Retrofit heat exchanger options 	<ul style="list-style-type: none"> • Improved maintenance and control
Pumps	<ul style="list-style-type: none"> • Overpumping • High cost of maintenance 	<ul style="list-style-type: none"> • Variable speed pumps with integrated controls 	<ul style="list-style-type: none"> • Space savings • Low operating cost • Improved maintenance and control
Fire Systems	<ul style="list-style-type: none"> • Insufficient alarms • Lack of reporting and data logging 	<ul style="list-style-type: none"> • Remote fire monitoring systems 	<ul style="list-style-type: none"> • Alarms • Data logging • Text messaging